Subject Index

A

Abdominal aorta 109
Acid excretion 262
Acidic amino acids 215
Acidification 63, 71
– and scanning microscopy 262
Acidosis 157
Acetylcholine 109, 144
Action potential 287
Activation energies 71
Active Na^+ pump 190
– renin 308
– unloading 292
ADH 243
Afferent arteriolar diameter 340
– units 31
Albino/pigmented rats 42
Aldosterone 130
Algesic agents 31
Alkalinization 63
Alkalosis 157
Alpha-chloralose 95
Alveolar gas volume 269
Amino acids 199, 210, 215
– acid transport 190
4-Aminopyridine 248
Analgesic agents 31
Anesthesia 77, 133
Anoxia 139
Anticipatory postural changes 292
Aorta 109, 275
Aortic constriction 340
Apical junctions 243
Arterial chemoreceptor 313
– P_{O_2} 313
– wall viscosity 328
Arteries, cerebral 95
Arteriolar and precapillary O_2 diffusion 118
L-Asparate 215
Atrioventricular node cell 15
Autoregulatory response 340
Avian temperature regulation 278
Axial elastic modulus 99

B

Barium 318
Basic amino acids 210
Basolateral membrane 92
Beta-stimulation 109
Bicarbonate 95
–, cerebrospinal fluid 157
Bimodal interspike interval histograms 148
Blockage of potassium conductance 318
Blood-brain barrier 157
Blood pressure 31
Brain cortex microvessels 118
– ventricles 157
Brainstem 278
Breath-holding 269
2-Bromoethylamine 262
Brushborder 210
– membrane 179

C

Ca removal processes 232
Ca-uptake 109
Ca^{2+} 23
Ca^{2+} activated K^+ conductance 248
Ca^{2+} activated K^+ current 254
Ca^{2+} ionophoresis 248
Caffeine 109
Calcium 1, 171, 232, 237
– changes in terminals 1
– channel blocker D600 287
– current 287
– fluxes 144
Capillaries 118
Carbon monoxide 313
Carbonic anhydrase 63
Cardiac cell membrane 287
– glycoside 171
– vascular changes 31
Carotid body 313
Catecholamines 109
Cell membrane 215
– – resistance 179
Cellular transport of amino acids 215
Cerebral arteries 95
– cortex 118
– veins 95
Cerebrospinal fluid 95, 157
Cerebrovascular resistance 95
Chemoreceptor inhibition 313
– mechanism 313
Chloralose 31
Circumferential wall stress 328
Cl^- 23
Clearance of mediator 121
CO single breath transfer factor 269
CO_2/HCO_3^- buffer system 63
CO_2-ventilatory response 77
Colchicine 121, 222
Cold tolerance 283
Collecting duct 302
Competition experiments 199
Competitive inhibition of Ca-entry 237
Concentrating ability 302
Conductance pathway 123
Conscious rats 351
Constant field relation 254
Contractile action of norepinephrine (NE) 275
– force 287
– properties 164, 334
Contraction times 164
Cortical iso-converting enzyme activity 281
Cotransport 190
Crossbridges 99
Current-voltage relation 254
Cystine 199
L-Cystine 210
Cytoplasmic K^+ 322
Cytosol composition 23

D

Delayed release of acetylcholine 144
Denervation natriuresis 133
Depolarization 322
Dibasic amino acids 199
Dibutyryl cyclic adenosine monophosphate 144
Dietary fibre 139
– Na supply 133
Diffusion 139
Digestion 139
Discharge statistics 148
Dopamine 144
Dynamic elastic modulus 328

E

Electrical activities 83, 322
– stimulation 334
Electrophysiological analysis 179, 190, 199, 210, 215
Electrophysiology 190, 199
End-plate current 121
Enterocyte 92
Entry of calcium 237
Epithelial transport kinetics 199
EPSP 83
Erythropoiesis 83
Erythropoietin 83
Everted jejunal sacs 37
– sacs, rat intestine 139
Evoked action potentials 297
Excitation-contraction cycle 334
Excitatory post synaptic currents (EPSCs) 232, 237
Exercise 334
Exteriorized lymphatico-venous shunts 351
External sodium 51, 171
Extra- and intracellular application 287

F

Facilitation 1, 232, 237, 248
Fast muscles 164
Filaments 99
Frequency stimulation 83

Subject Index

A

Abdominal aorta 109
Acid excretion 262
Acidic amino acids 215
Acidification 63, 71
– and scanning microscopy 262
Acidosis 157
Acetylcholine 109, 144
Action potential 287
Activation energies 71
Active Na^+ pump 190
– renin 308
– unloading 292
ADH 243
Afferent arteriolar diameter 340
– units 31
Albino/pigmented rats 42
Aldosterone 130
Algesic agents 31
Alkalinization 63
Alkalosis 157
Alpha-chloralose 95
Alveolar gas volume 269
Amino acids 199, 210, 215
– acid transport 190
4-Aminopyridine 248
Analgesic agents 31
Anesthesia 77, 133
Anoxia 139
Anticipatory postural changes 292
Aorta 109, 275
Aortic constriction 340
Apical junctions 243
Arterial chemoreceptor 313
– P_{O_2} 313
– wall viscosity 328
Arteries, cerebral 95
Arteriolar and precapillary O_2 diffusion 118
L-Asparate 215
Atrioventricular node cell 15
Autoregulatory response 340
Avian temperature regulation 278
Axial elastic modulus 99

B

Barium 318
Basic amino acids 210
Basolateral membrane 92
Beta-stimulation 109
Bicarbonate 95
–, cerebrospinal fluid 157
Bimodal interspike interval histograms 148
Blockage of potassium conductance 318
Blood-brain barrier 157
Blood pressure 31
Brain cortex microvessels 118
– ventricles 157
Brainstem 278
Breath-holding 269
2-Bromoethylamine 262
Brushborder 210
– membrane 179

C

Ca removal processes 232
Ca-uptake 109
Ca^{2+} 23
Ca^{2+} activated K^+ conductance 248
Ca^{2+} activated K^+ current 254
Ca^{2+} ionophoresis 248
Caffeine 109
Calcium 1, 171, 232, 237
– changes in terminals 1
– channel blocker D600 287
– current 287
– fluxes 144
Capillaries 118
Carbon monoxide 313
Carbonic anhydrase 63
Cardiac cell membrane 287
– glycoside 171
– vascular changes 31
Carotid body 313
Catecholamines 109
Cell membrane 215
– – resistance 179
Cellular transport of amino acids 215
Cerebral arteries 95
– cortex 118
– veins 95
Cerebrospinal fluid 95, 157
Cerebrovascular resistance 95
Chemoreceptor inhibition 313
– mechanism 313
Chloralose 31
Circumferential wall stress 328
Cl^- 23
Clearance of mediator 121
CO single breath transfer factor 269
CO_2/HCO_3^- buffer system 63
CO_2-ventilatory response 77
Colchicine 121, 222
Cold tolerance 283
Collecting duct 302
Competition experiments 199
Competitive inhibition of Ca-entry 237
Concentrating ability 302
Conductance pathway 123
Conscious rats 351
Constant field relation 254
Contractile action of norepinephrine (NE) 275
– force 287
– properties 164, 334
Contraction times 164
Cortical iso-converting enzyme activity 281
Cotransport 190
Crossbridges 99
Current-voltage relation 254
Cystine 199
L-Cystine 210
Cytoplasmic K^+ 322
Cytosol composition 23

D

Delayed release of acetylcholine 144
Denervation natriuresis 133
Depolarization 322
Dibasic amino acids 199
Dibutyryl cyclic adenosine monophosphate 144
Dietary fibre 139
– Na supply 133
Diffusion 139
Digestion 139
Discharge statistics 148
Dopamine 144
Dynamic elastic modulus 328

E

Electrical activities 83, 322
– stimulation 334
Electrophysiological analysis 179, 190, 199, 210, 215
Electrophysiology 190, 199
End-plate current 121
Enterocyte 92
Entry of calcium 237
Epithelial transport kinetics 199
EPSP 83
Erythropoiesis 83
Erythropoietin 83
Everted jejunal sacs 37
– sacs, rat intestine 139
Evoked action potentials 297
Excitation-contraction cycle 334
Excitatory post synaptic currents (EPSCs) 232, 237
Exercise 334
Exteriorized lymphatico-venous shunts 351
External sodium 51, 171
Extra- and intracellular application 287

F

Facilitation 1, 232, 237, 248
Fast muscles 164
Filaments 99
Frequency stimulation 83

G

Galactose transport 104
Gallamine 248
Gastrointestinal tract 92
Glomerular filtration 340
– – rate (GFR) 262
Glomeruli 281
Glucose 45, 130
– balance in enterocyte 92
– cotransport 190
– -induced electrical activity 322
– transport 104
D-Glucose balance 92
L-Glutamate 215
Glutaraldehyde 243
Glycine 199

H

Hanssen's technique 262
Harmaline 190
HCO_3^- 23
Heart Purkinje fibres 171
– rate 31
Hepatic lymphatic fistula 351
Heterologous insulin 227
Hexose absorption 104
Hill's three-element model 328
H ion back-flux 71
H^+ ion secretion 63
Homologous insulin 227
Horizontal eye movements 42
Hydrostatic pressure 243
Hydroxyproline 199
Hyperdicarboxylaminoaciduria 215
Hyperglycaemia 104
Hyperpolarization activated current 15
Hypertensive rat 340
Hypertonic solutions 51
Hypoxia 45
Hypoxic hypoxia 83
Hypothalamic thermosensitivity 278
Hypothyroid hamsters 283

I

Inactive renin 308
Inhibitors 190
Insulin 227
Internal barium 318
– longitudinal resistance 45
– sodium 51
Intestinal absorption 104
– glucose transport 92
– lymphatic fistula 351
– thiamin transport 37
– unstirred water layer 139
Intra- and extracellular application 287
Intracellular buffering systems 171
– Ca^{2+} ionophoresis 248
– calcium 171
– ion-activity 23
– lithium 297
– measurements 130
– pH 171
– sodium 171
– – activity 51
– thiamin phosphorylation 37
Ion exchange mechanisms 51
– -selective liquid-membrane microelectrodes 23
– selective microelectrodes 171
– sensitive microelectrode 297
Ionophoresis 248
Iso-converting enzyme 281
Isolated aortas 275
– frog spinal cord 297
– kidney, filtering, non filtering 227
– perfused rat kidney 227
– rat kidney 63
– ventricular cells 287
Isometric muscle contraction 148
Isoprenaline-evoked membrane potential changes 123
Isoprenaline-equilibrium potential 123

J

Jejunal sacs 37
Jejunum "in vitro" 92
– in vivo 104
Juxtaglomerular apparatus 308
Juxtamedullary glomeruli 262

K

K^+ 23
K^+ channel blockers 248
K^+ conductance 248
K^+ current 248, 254
K current 318
K-free solutions 171
Kidney 63
– denervation 281
–, Na dependent transport 179
–, electrophysiological analysis 210
– function, urea 302
– Na dependent transport 190
–, papillary necrosis 262
–, perfusion pressure 340
–, sugar and amino acid transport 215
– tissue 83
–, tubular acidification 71
Krebs-Ringer's solution 83

L

Lactation 344
Li^+ 23
Liquid-membrane microelectrodes 23
Lithium distribution 297
Long-term stimulation 164
Lorentzian curves 254
Lung function 269
Lymphatico-venous shunts 351

M

Magnesium 237
Maltose hydrolysis 139
Medullary collecting duct 302
Membrane current 15, 248
– potential 109, 123, 322
– resistance 123
– time constant 15
Metabolic acidosis 215
– clearance 227
Methoxyverapamil 287
Mg^{2+} 23
Microapplication 95
Microbiopsy 308
Microcatheterization technique 302
Microdissection 308
Microionophoretic application 123
Microsphere method 340
Milk intake 344
Miniature end-plate current 121
Molluscan neurones 248, 254
Motoneurons 297
Muscle 45, 148, 334
– afferents 31
– contractile properties 164
– fibre 99
– spindle 148
Myelinated fibres 348
– nerve fibre 56, 318
Myofibrils 164
Myosin light chains 164
– – chain kinase 334
– phosphorylation 334

N

Na-carboxymethylcellulose (CMC) 139
Na coupled, renal transport 210
Na currents 56
Na-driven transport 215
Na/H exchange 63
Na/H exchanger 71
Na-K pump 123, 171
Na^+ 23
Na^+ glucose cotransport 179, 190
Na^+ transport 92
Nephrons 308
Nerve fiber 56
– terminal 222
Neuromuscular junction 144
– transmission 121, 222
Neurones 248, 254
Neurotransmitter release 1, 232, 237
Neutral amino acids 199
Nociceptors 31
Node of Ranvier 56, 318, 348
Noise analysis 254
Non-nociceptive muscular fine afferent units 31
Non-shivering thermogenesis 283
Non-steady state 344
Non-steady state analysis 179
Noradrenaline 283
Noradrenergic receptor 275
Norepinephrine 275
Normocapnia 157

O

Olfactory cortical slices 83
Optokinetic-vestibular responses 42
Oscillations 322
Osmotic compression 99
– water flow 243
Oubain 190
Oxygen consumption 83
– microelectrode 83
– profile 83
– tension 118

P

Pancreatic B cells 322
Papillary necrosis 262
Paracellular pathway 243
Parotid acinar cells 123
Passive electrical properties 15, 45
– unloading 292
Permeability 348
– coefficient 254
– properties 243
pH 71, 95
pH-Purkinje fibres 171
Phlorizin 190
Phlorrhizin sensitive pathway 104
Phosphorylation state of myosin light chains 334
Pial veins 95
Plasma electrolyte concentrations 262
– HCO_3^- 157
– volume 133
– – repletion 133
pO_2 measurements 118
Posture 292
Potassium 95, 348
– conductance 318
– current 15
– permeability 348
Potential (voltage) clamp 348
Pretectum 42
Proline 199
Protein depletion 302
Proximal tubule 63, 199, 215
Pump-leak system of H^+ transport 63
Purkinje fibres 171

Q

Quantal content 222
Quinidine 248

R

Radioimmunoassay 227
Rebreathing technique 77
Relaxation measurements 254
Relaxed skinned skeletal muscle fibre 99
Renal amino acid transport 199, 210
– denervation 133, 281
– perfusion pressure 340
– proximal tubule 179, 190
– sugar and amino acid transport 179, 190, 215
– – transport 199, 210
–, tubular acidification 71
– vascular resistance 340
Renin, active and inactive 308
Repetitive stimulation 121, 222
Repolarization 322
Reserpine 275
Resistance to diffusion 139
Respiratory control system 77
Resting tension 109
Rheogenic transport 215
– – systems 199
Rostral brainstem 278

S

Salt intake 308
Saturation kinetics 1
Scanning electron miscroscopy 262
Scorpion toxin 56
Section thickness 83
Sensitization to norepinephrine 275
Serosal fluid 37
Shivering 278
Shunt resistance 179
Single nephron GFR 262
– sucrose gap method 45
SITS 63
Skeletal muscle 31, 51, 164, 334
– – fibre 99
Skinned skeletal muscle fibre 99
Slow inward current 15
Small intestine 37
Smooth muscle 275, 328
– – cells 109
Sodium 171
– concentration 104
– depletion 133
– excretion 133
– -selective microelectrodes 51
– transport 130
Soma membrane 254
Space constant 45
Spinal cord 297
Spontaneously hypertensive rat 340
Streaming potentials 139
Sucrose 51
– permeability 243
Sugar specificity 190
Summation 248
Surface of arterioles 118
Sympathetic nervous system 281
Synaptic cleft 121
– delay 222
– spots 237
– transmitter release 1, 232, 237

T

Tail artery 328
Temperature 71
Temporal pattern of erythropoietin titers 88
Tetraethylammonium 109, 248
Tetrodotoxin 15
Thermode 278
Thermogenesis 283
Thermosensitivity 278
Thiamin phosphoester content 37
Thoracic duct fistula 351
Thyroid hormones 283
Tissue pO_2 83
Toad bladder 243
– skin 130
Transfer factor 269
Transmitter at neuromuscular junctions 1
Transport kinetics 139
– of basic amino acids 210
Triceps surae muscles 148
Tubular acidification 71
– cells 210, 215
Twin pulse facilitation 237
Twitch/tetanus ration 164
Tyrode solution 15

U

Unloading reflex 292
Unstirred water layer 139
Urea reabsorption 302
Urethane 31

V

Vascular smooth muscle 328
Vasopressin 243
Veins, cerebral 95
Venom, scorpion *Centruroides sculpturatus* 56
Ventricular cells 287
– muscle 45
Venules 118
Vestibulo-ocular-reflex 42
Viscosity 139
Viscous incubation media 139
Visual-vestibular interactions 42
Voltage clamp 15, 56, 254, 318
Voltage jump experiments 254

W

Water and sodium excretion 133
– reabsorption in collecting duct 302
– turnover 344